

Alarms structure in Ignition: VERY Preliminary studies

DAQ SC WG Group Meeting
04-March-2021
P. Mendez

Topics

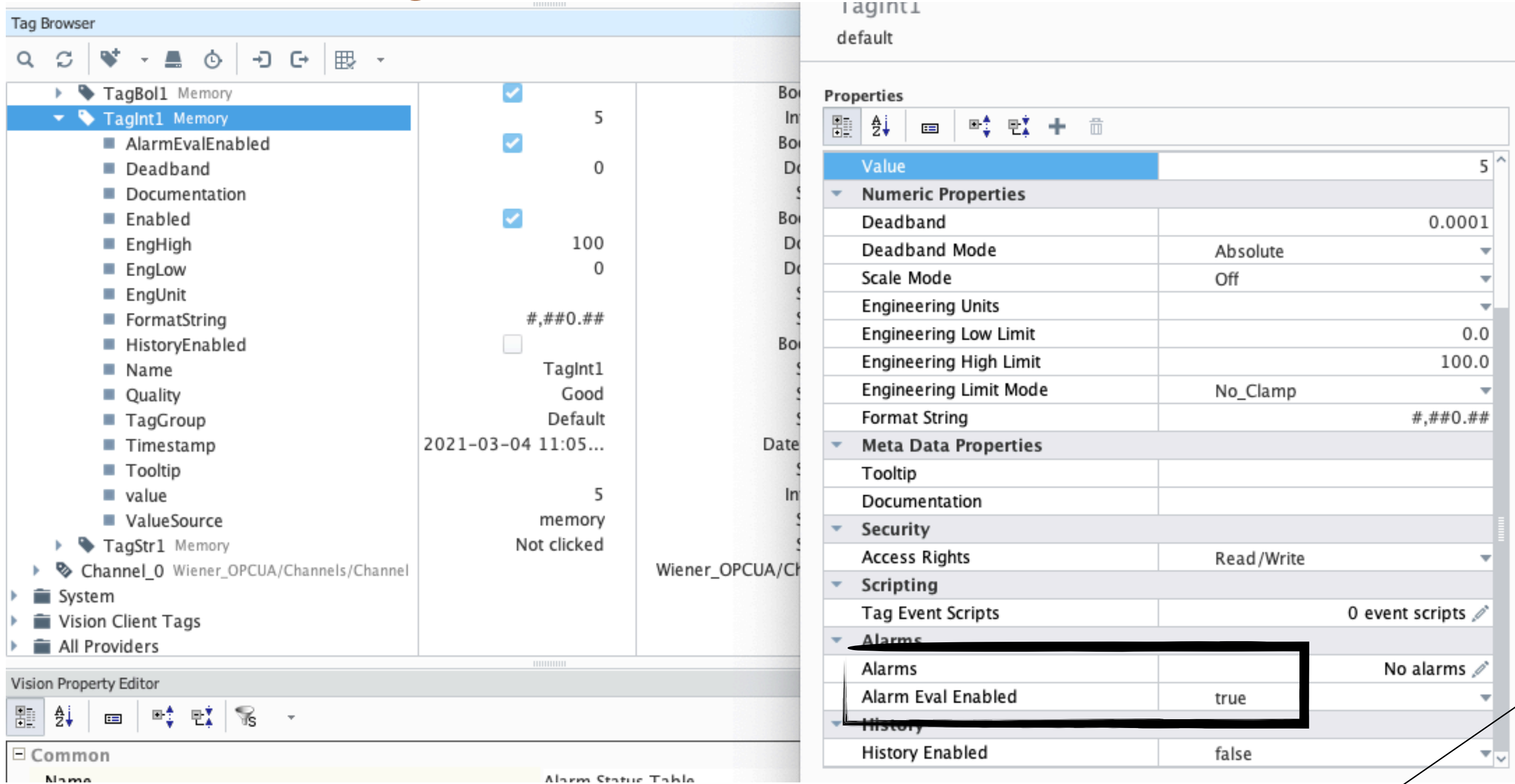
- Alarms setup in Ignition through data holders: Tags and UDTs
- The Alarm Journal
- Visualisation
- Alarm notification profiles

Principles of alarms in Ignition

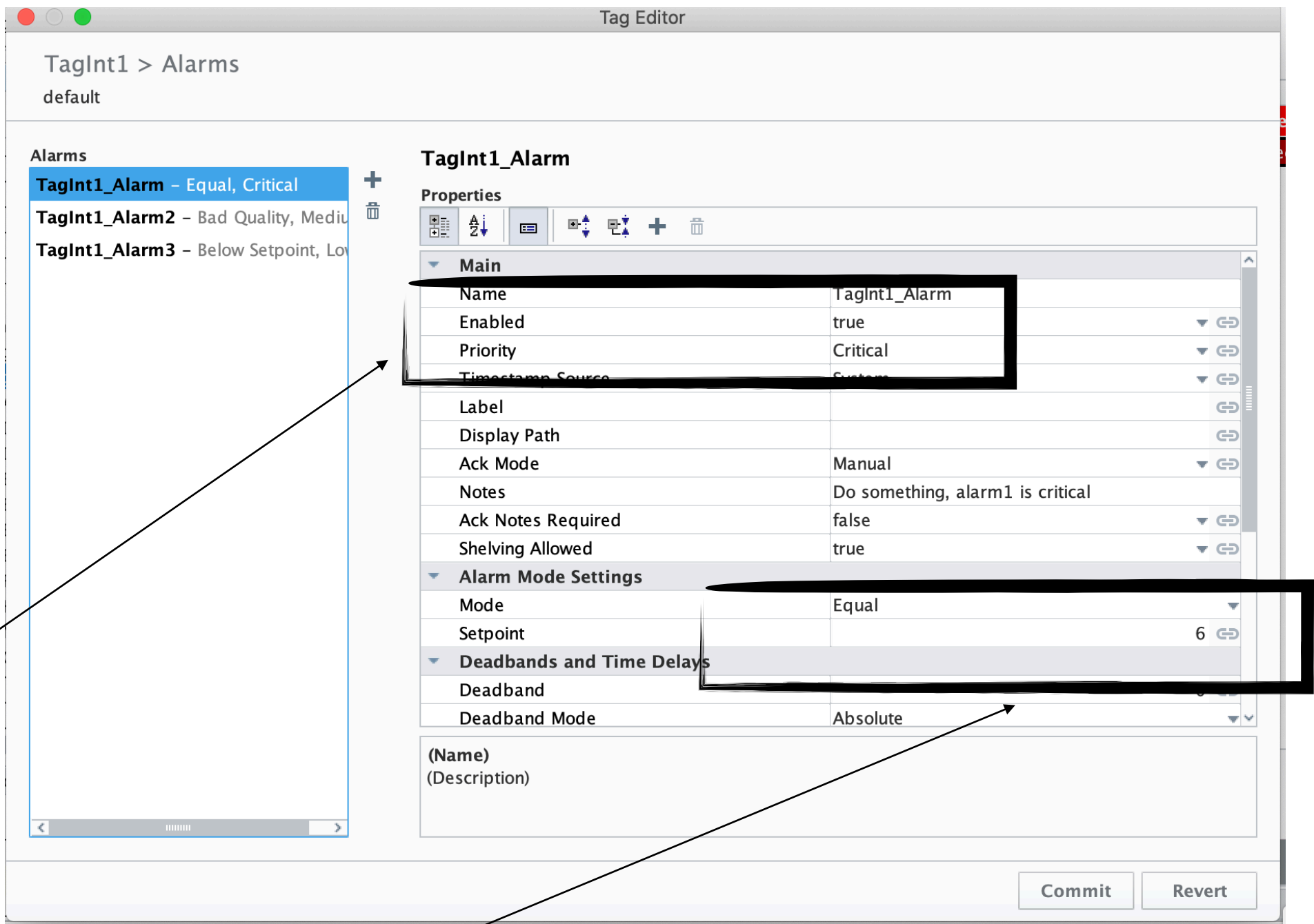
- Alarms are normally linked to data structures: Tags and UDTs and set through specific conditions
 - When the condition becomes true —> alarm is active
 - When it becomes false after having been true —> alarm is cleared
- Access to the specific alarms applications are provided for acknowledging
- Alarms have their own names, they can be grouped for searching and include specific settings and priorities
- You can also log them in the DB of the system
- Notifications profiles included as: email, sms and voice
- The system observes also system alarms (gateway values)

Setting up alarms through Tags: standard approach in Ignition

- Ignition offers an automated way of monitoring tag values for specific conditions — Facility accessible from the tag edition



Multiple alarms per Tag if needed



Enabled part is bindable
TAGS: (interesting to enable alarms only if machines are on)
EXPRESSIONS (interesting to enable alarms during a part of the day only)

In this example the setpoint is hardcoded.
But it can be dynamic by linking it to another tags or expressions

Active and clear delays

- Active delay is a time in seconds before the alarm will be considered truly active. Same meaning for cleaning
- If the condition alarm becomes false during the active delay, the alarm will not become active at the end of that delay

The screenshot shows the 'Tag Editor' window with the 'Alarms' tab selected. On the left, a list of alarms is shown: 'TagInt1_Alarm - Equal, Critical', 'TagInt1_Alarm2 - Bad Quality, Medium', and 'TagInt1_Alarm3 - Below Setpoint, Low'. 'TagInt1_Alarm2' is selected. The right pane shows the 'Properties' for 'TagInt1_Alarm2'. The 'Active delay (seconds)' is set to 0. A tooltip for 'Active delay (seconds)' is visible at the bottom right, explaining it as the time before the alarm is truly active after the condition becomes true.

TagInt1_Alarm2 Properties	
Ack Mode	Manual
Notes	Ok, not so critical
Ack Notes Required	false
Shelving Allowed	true
Alarm Mode Settings	
Mode	Bad Quality
Deadbands and Time Delays	
Deadband	0
Deadband Mode	Absolute
Active delay (seconds)	0
Clear delay (seconds)	0
Notification	
Ack Pipeline	
Active Pipeline	
Clear Pipeline	
Email Notification Properties	
Custom Message	

Active delay (seconds)
The time, in seconds, before the alarm will be considered truly active after the active condition becomes true. Also known as a "rising edge time deadband".

Commit Revert

Alarms Operations

	Active Time	Label	Display Path	Current State	Priority	Event Id
<input type="checkbox"/>	3/4/21, 11:38 AM	TagInt1_Alar...	TestingTags/TagInt1/Ta...	Active, Unacknowledge...	Critical	1709b82a-1...
<input checked="" type="checkbox"/>	3/4/21, 11:09 AM	TagInt1_Alar...	TestingTags/TagInt1/Tagl...	Active, Acknowledged	Low	257050d9-...
<input type="checkbox"/>	3/4/21, 11:32 AM	TagInt1_Alarm	TestingTags/TagInt1/Tagl...	Cleared, Unacknowl...	Critical	db5dd4ef-4...

AcknowledgeShelve🟢 1 alarm(s) acknowledged.

blinking till acknowledge

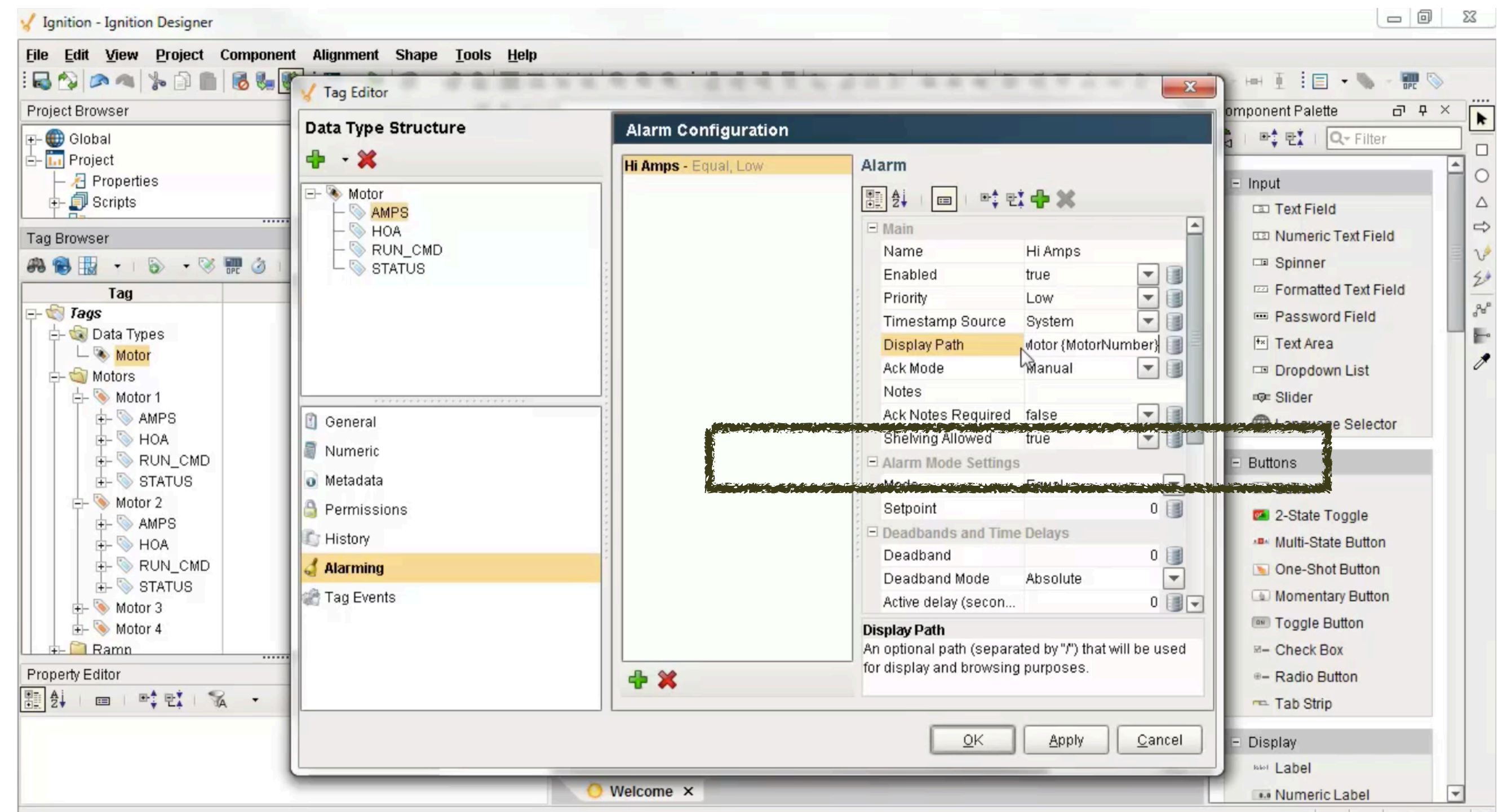
The Alarm Status Table is highly customizable and can be configured to show active, unacknowledged, cleared, and acknowledged alarms.

The visualisation table is part of the Ignition components accesible from the Designer

Shelving an alarm allows you to temporarily remove the alarm from the entire alarm system (not just the local client). This is configurable in minutes and when the time is over, the alarm will be re-evaluated

Definition of Alarms in UDTs

- Alarms take advantage of the UDT structure: definition-instances
- Any alarm included at the definition level of the UDT will be inherited by the instances
- Remember that in UDTs, the repetition path of the tags was based on a parametrisation included at the definition level —> This must be also observed when declaring alarms at the definition



Display path will be used by operators to identify the tag affected
If not parametrised following the UDT definition, the display path will be the same for all alarms

Alarm Journal

- An alarm journal stores alarm history in a database
- It stores basic alarm data, such as their source and timestamp, along with associated alarm data and the alarm's properties values at the time the event occurred
- The Journal facility is configured at the GATEWAY
- Visualisation of data provided through a specific component available in the Designer and called: “Alarm Journal Table”

The screenshot shows the Ignition web interface for configuring Alarm Journal Profiles. The top navigation bar includes the Ignition logo, a user profile for 'patricia.mendez@cern.ch', and a 'Sign Out' button. A 'Get Designer' button is also present. The main content area is titled 'Config > Alarming > Alarm Journal Profiles'. A green banner indicates 'Trial Mode 0:17:39' with a message 'We're glad you're test driving our software. Have fun.' and an 'Activate Ignition' button. The left sidebar contains a 'SYSTEM' menu with options like Overview, Backup/Restore, Ignition Exchange, Licensing, Modules, Projects, Redundancy, and Gateway Settings. Below this is a 'NETWORKING' section with Web Server, Gateway Network, and Email Settings. At the bottom is a 'SECURITY' section with Auditing. The main configuration area shows three radio button options: 'Database' (selected), 'Remote', and 'Internal'. The 'Database' option description is 'Alarm journal events will be logged into an external database.' The 'Remote' option description is 'Alarm journal events will be sent to a remote gateway's alarm journal to be logged.' The 'Internal' option description is 'Alarm journal events will be logged into a SQLite database file, local to the gateway.' A 'Next >' button is at the bottom right. A dark blue callout box on the right lists features: 'Highly configurable including' followed by a bulleted list: 'priority to store', 'data filtering (supporting wildcards)', and 'data pruning and more'.

Ignition-epdttdi11 patricia.mendez@cern.ch Sign Out → Help ? Get Designer

Config > Alarming > Alarm Journal Profiles

Trial Mode 0:17:39 We're glad you're test driving our software. Have fun. Activate Ignition

Database
Alarm journal events will be logged into an external database.

Remote
Alarm journal events will be sent to a remote gateway's alarm journal to be logged.

Internal
Alarm journal events will be logged into a SQLite database file, local to the gateway.

Next >

Highly configurable including

- priority to store
- data filtering (supporting wildcards)
- data pruning and more

New from Ignition8.1